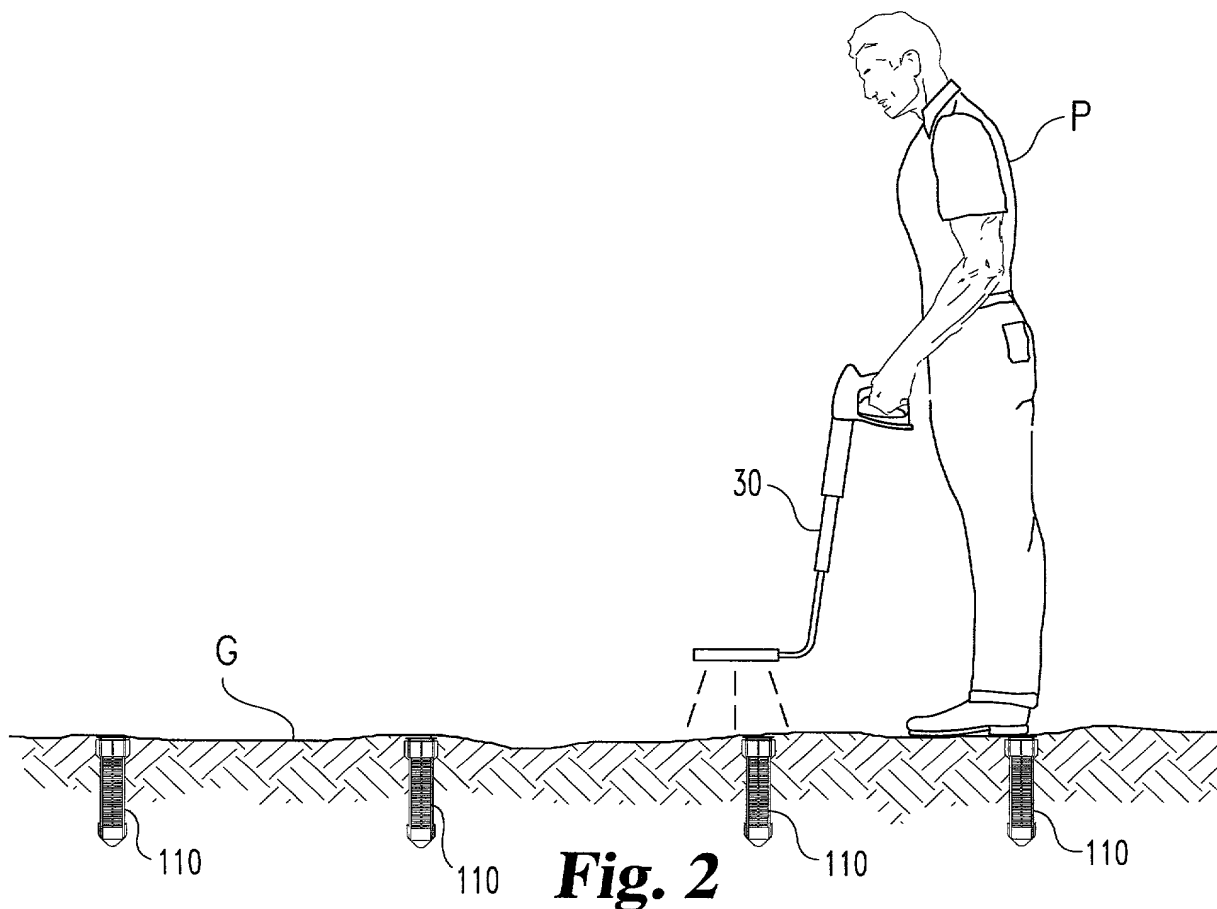
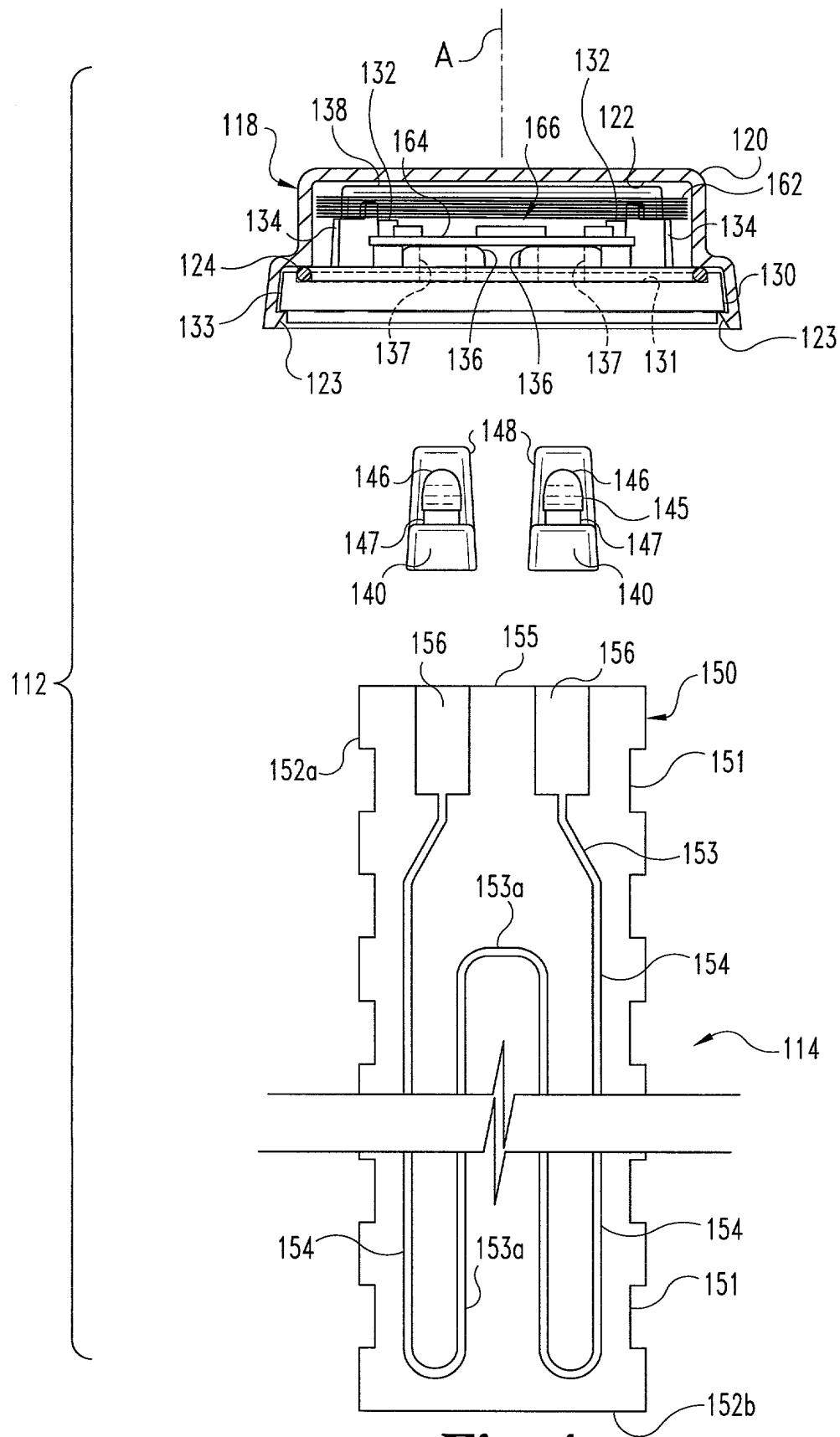


**Fig. 1**

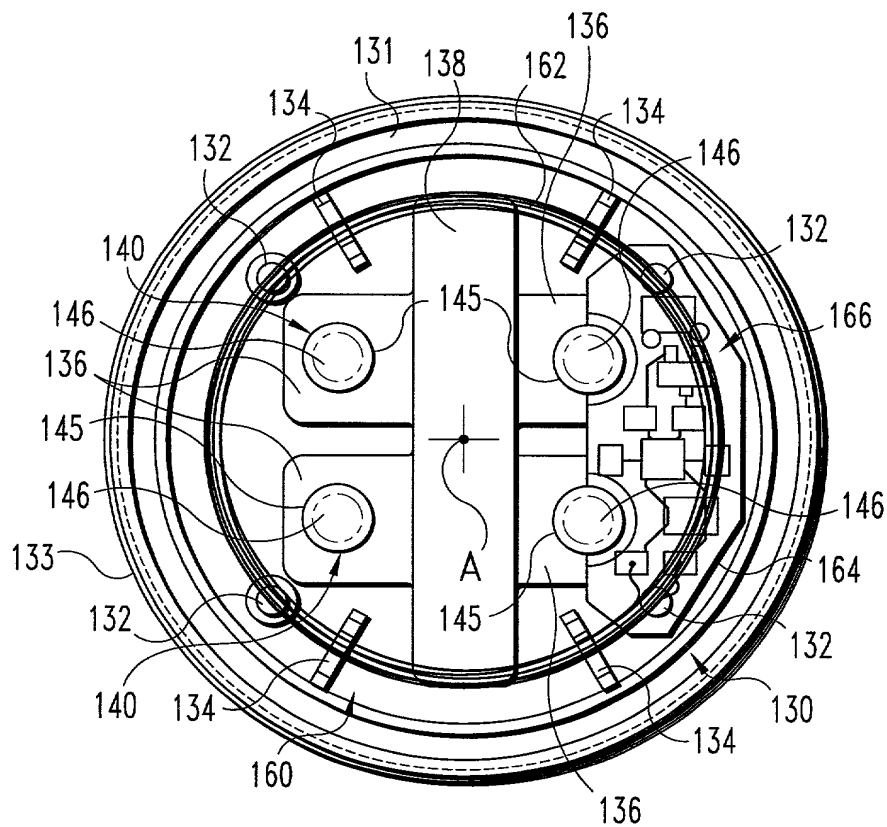


**Fig. 2**

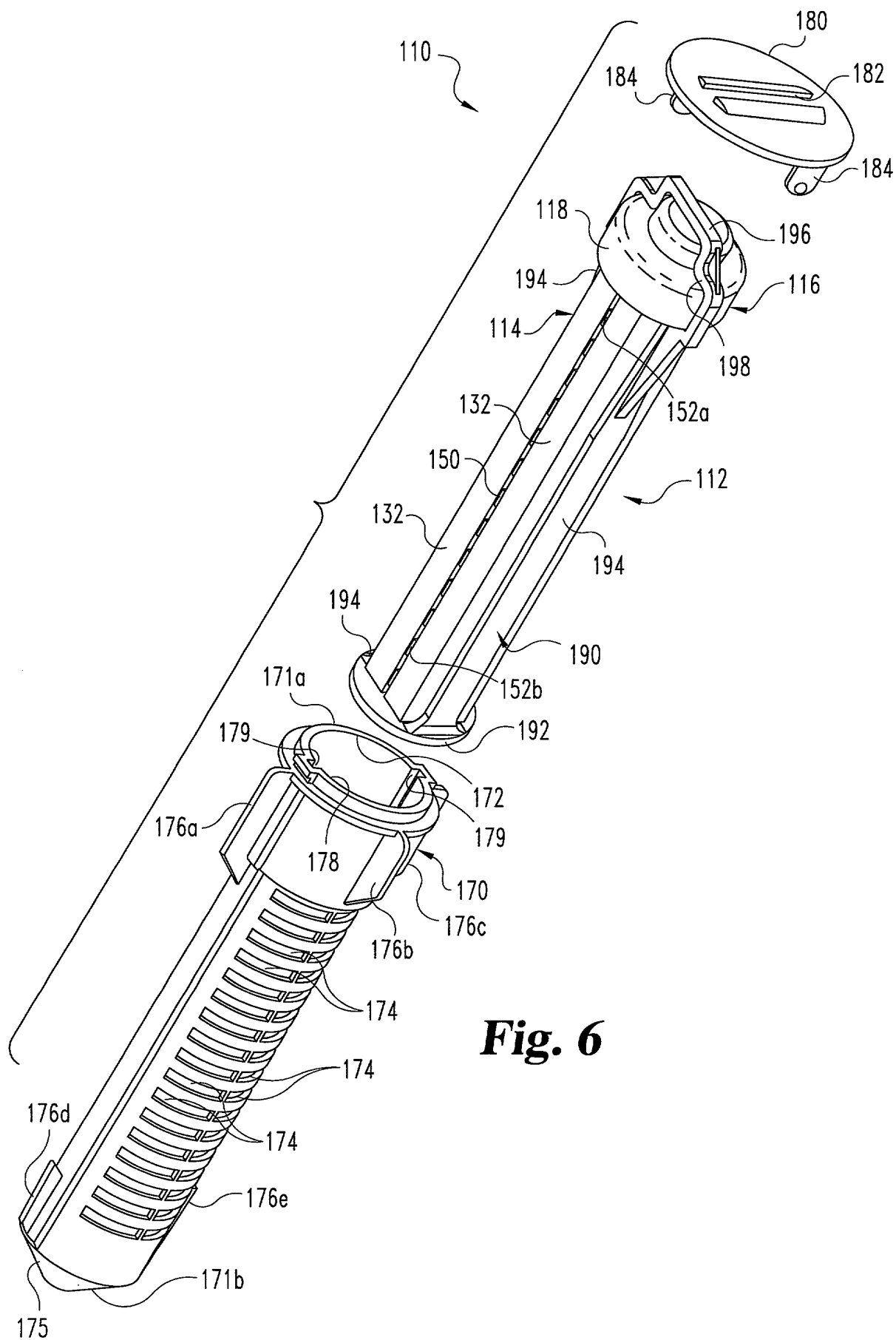




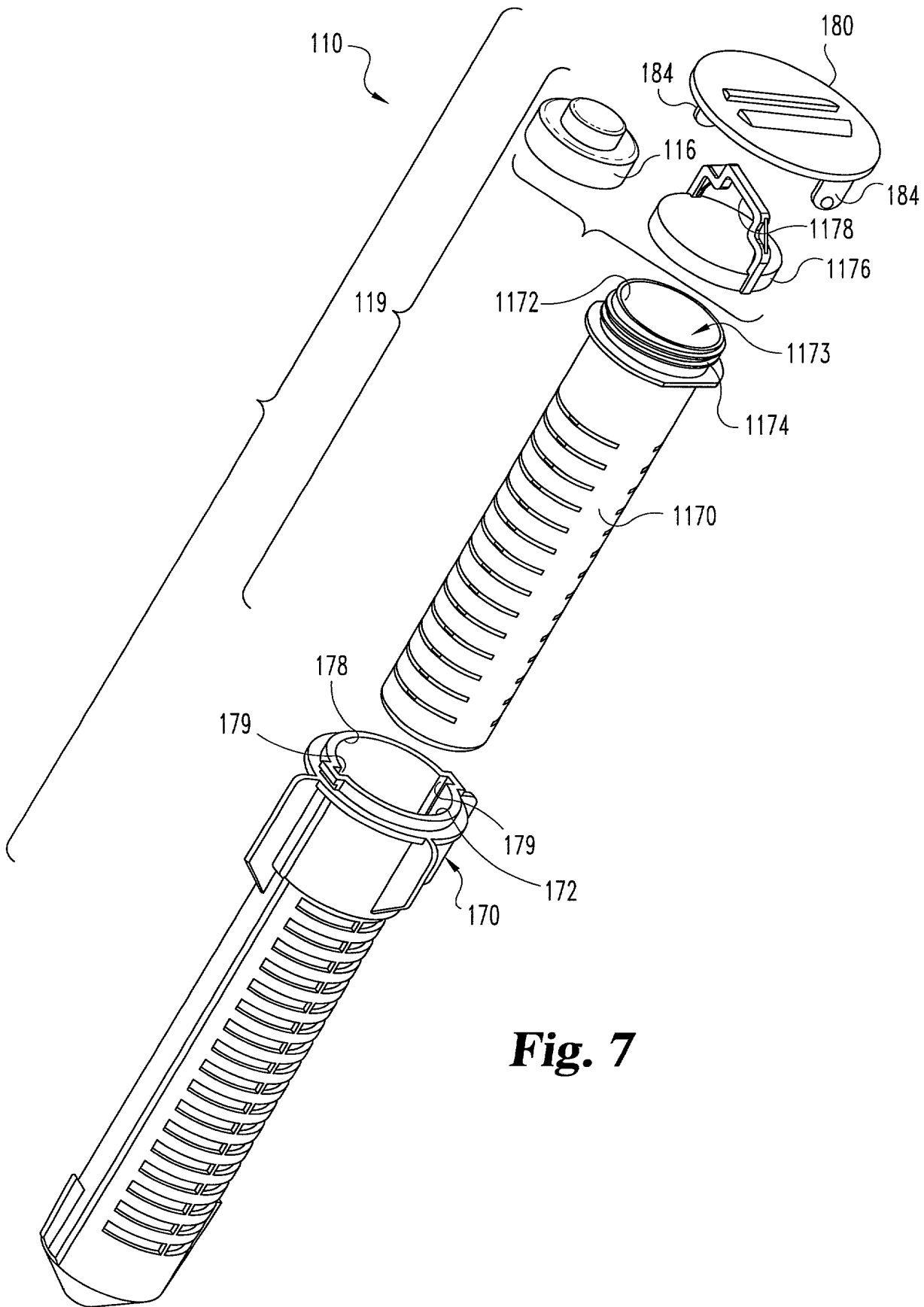
**Fig. 4**



**Fig. 5**

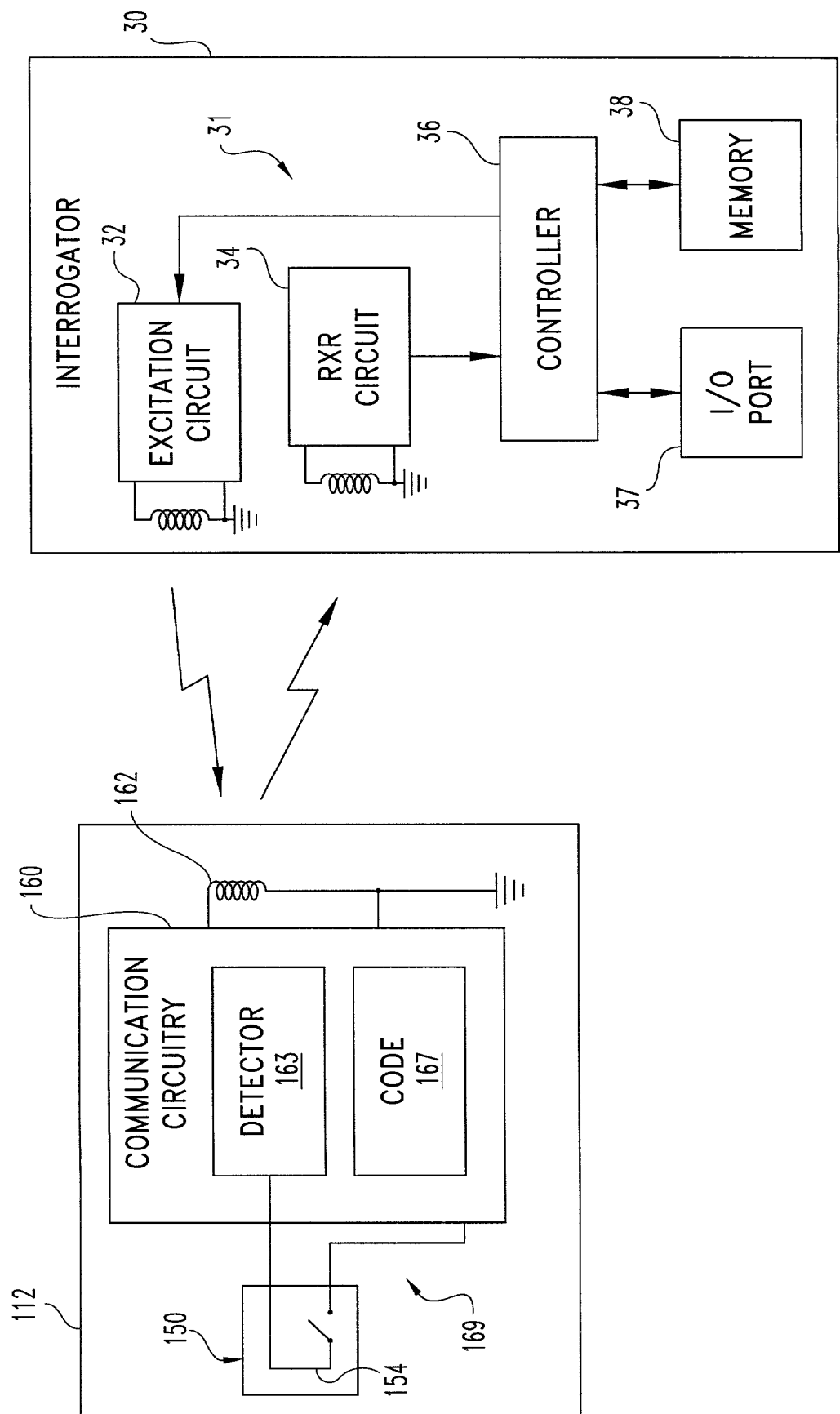


**Fig. 6**

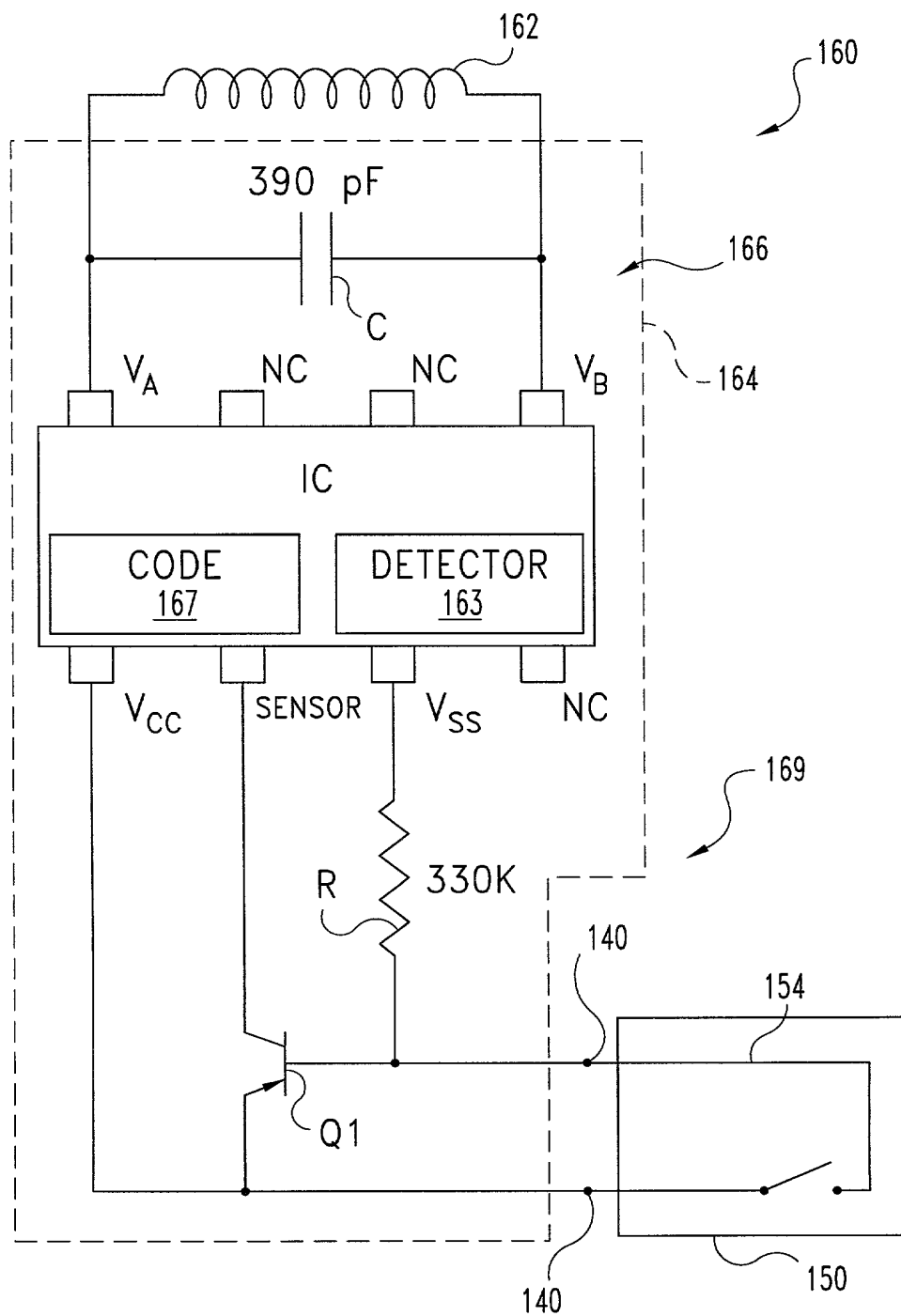


**Fig. 7**

FIG. 8 is a block diagram of an interrogator 30 and a tag 112. The interrogator 30 includes an excitation circuit 32, an RXR circuit 34, a controller 36, an I/O port 37, and memory 38. The tag 112 includes a communication circuitry 160, a detector 163, a code 167, and a switch 154. The interrogator 30 is connected to the tag 112 via a communication link 162.

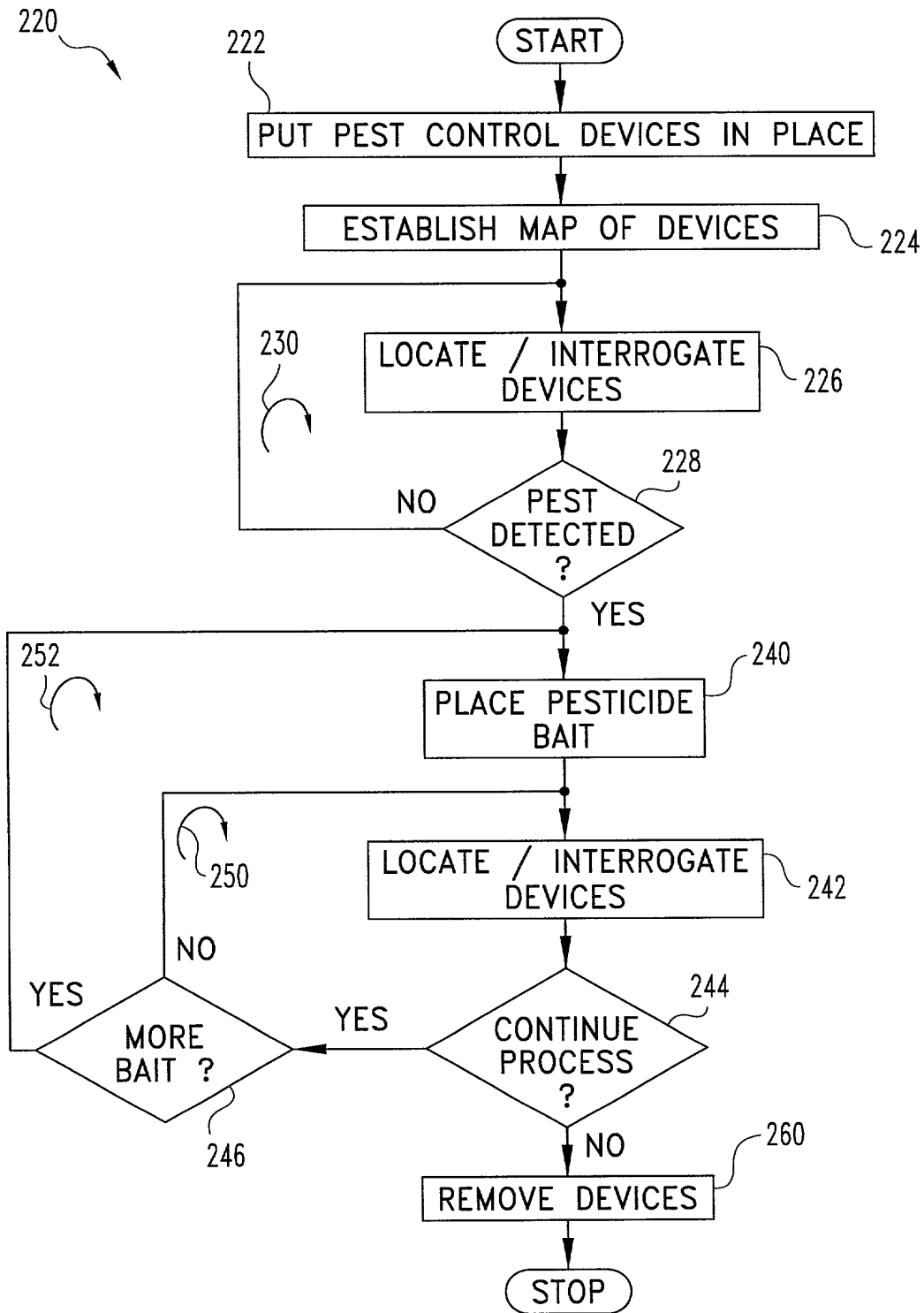


**Fig. 8**



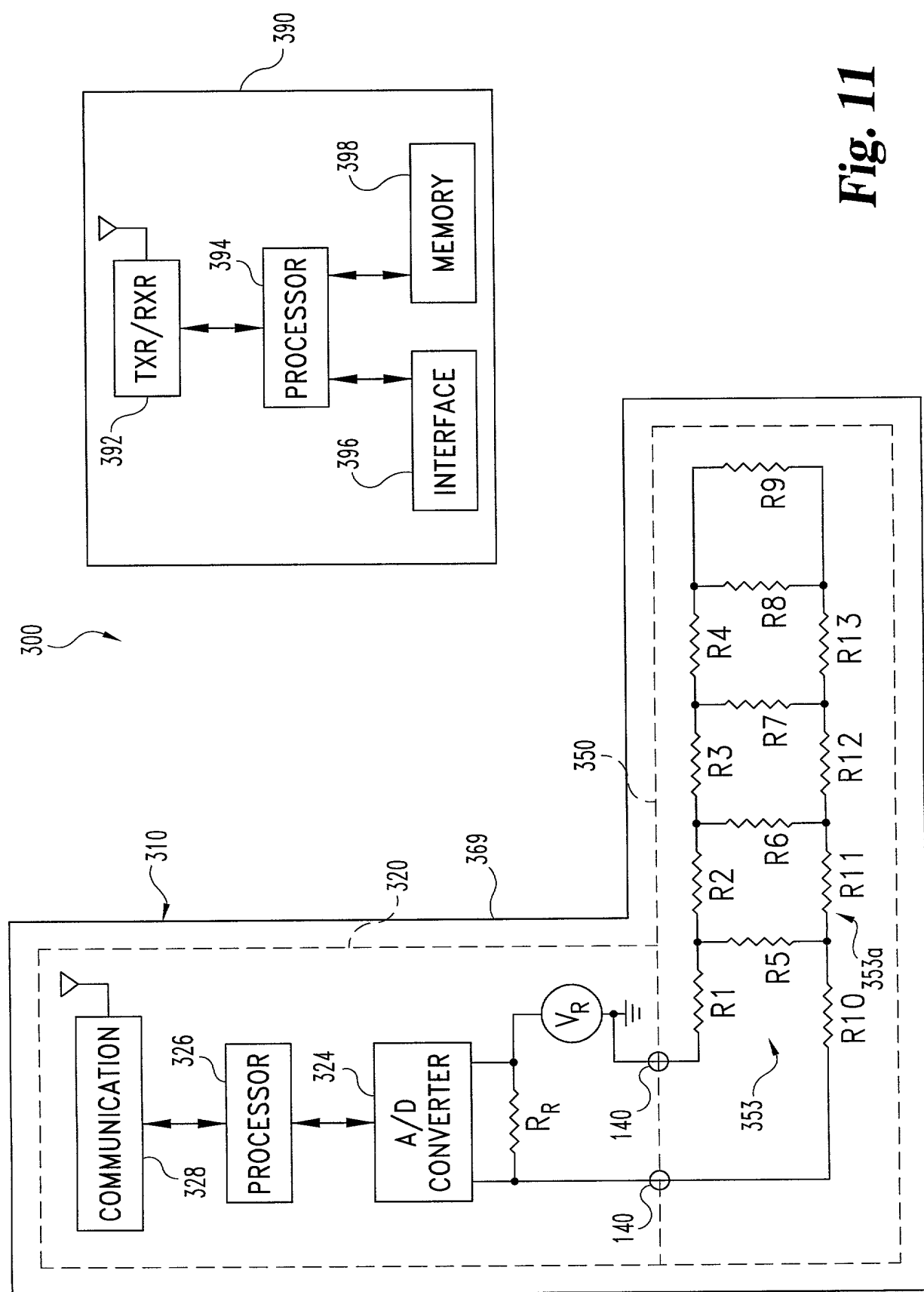
**Fig. 9**



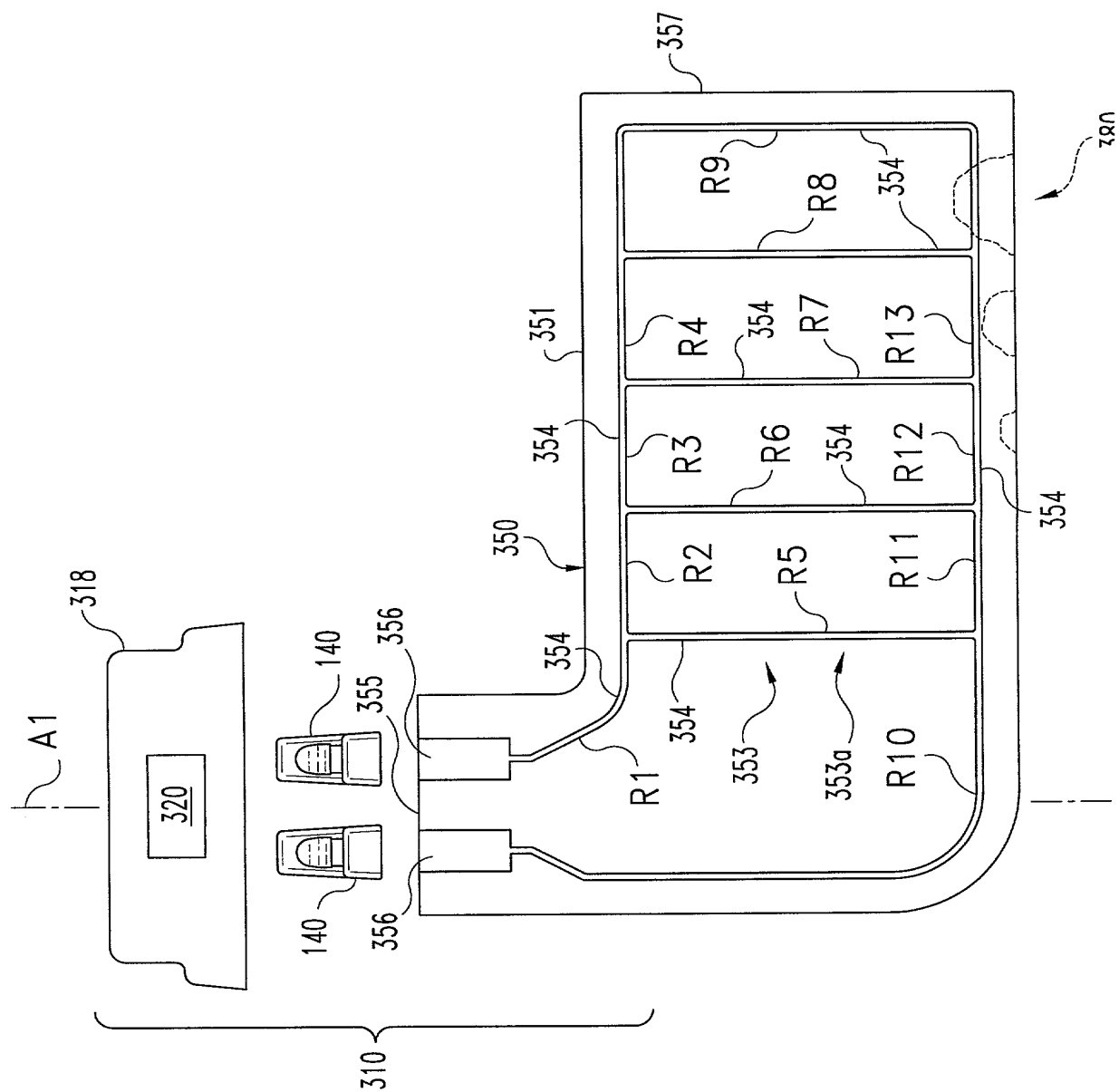


**Fig. 10**

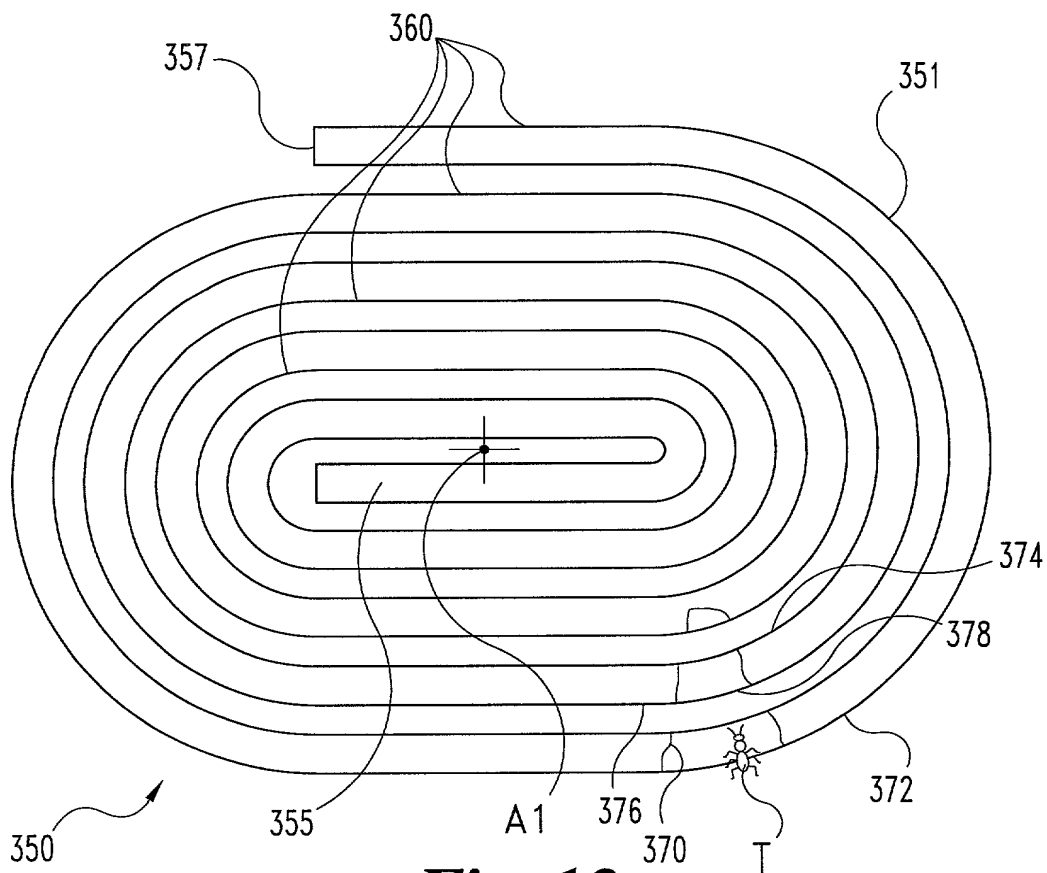
FIG. 11 is a block diagram of a system 300, which includes a first device 310 and a second device 320. The first device 310 includes a communication unit 328, a processor 326, and an A/D converter 324. The second device 320 includes a TXR/RXR 392, a processor 394, an interface 396, and memory 398. The first device 310 is connected to the second device 320 via a communication link 369. The first device 310 also includes a resistor network 353, which is connected to a voltage source V<sub>R</sub> and a ground. The resistor network 353 includes resistors R<sub>1</sub> through R<sub>10</sub> and R<sub>11</sub> through R<sub>13</sub>. The second device 320 is connected to the first device 310 via a communication link 369.



**Fig. 11**



**Fig. 12**



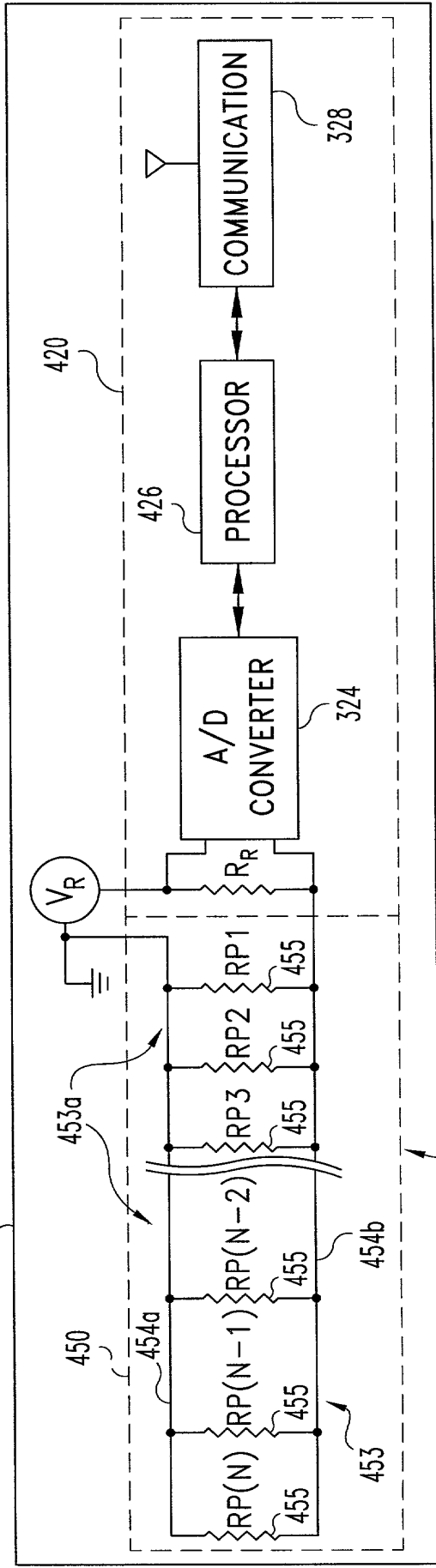
**Fig. 13**

FIG. 14 is a block diagram of a data collection unit 390. The unit 390 includes a sensor array 450, an A/D converter 324, a processor 326, and a communication unit 328. The sensor array 450 is connected to the A/D converter 324, which is connected to the processor 326, which is connected to the communication unit 328. The sensor array 450 includes a plurality of resistors RP(N), RP(N-1), RP(N-2), RP3, RP2, RP1, and RP, and a voltage source VR. The sensor array 450 is also connected to a ground symbol.

DATA COLLECTION  
UNIT  
390

400

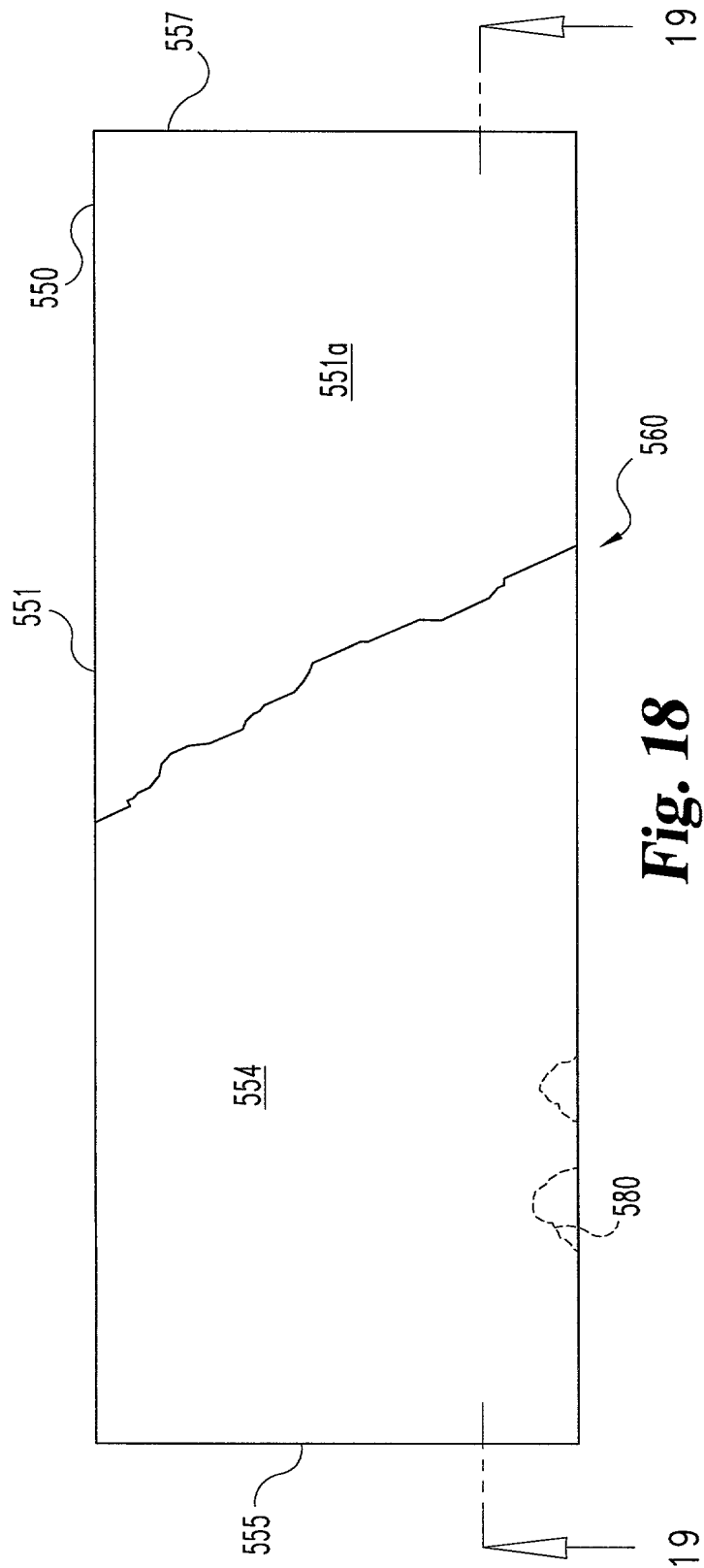
410



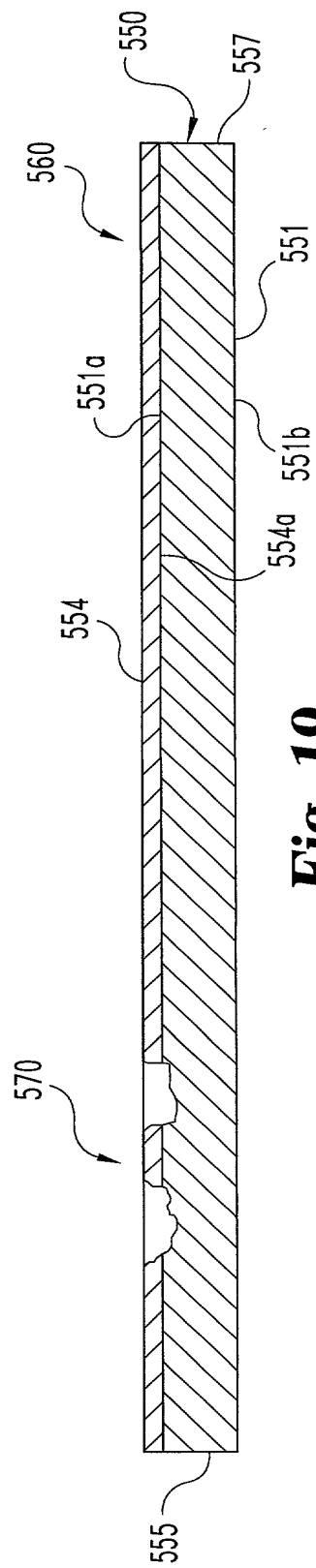
**Fig. 14**





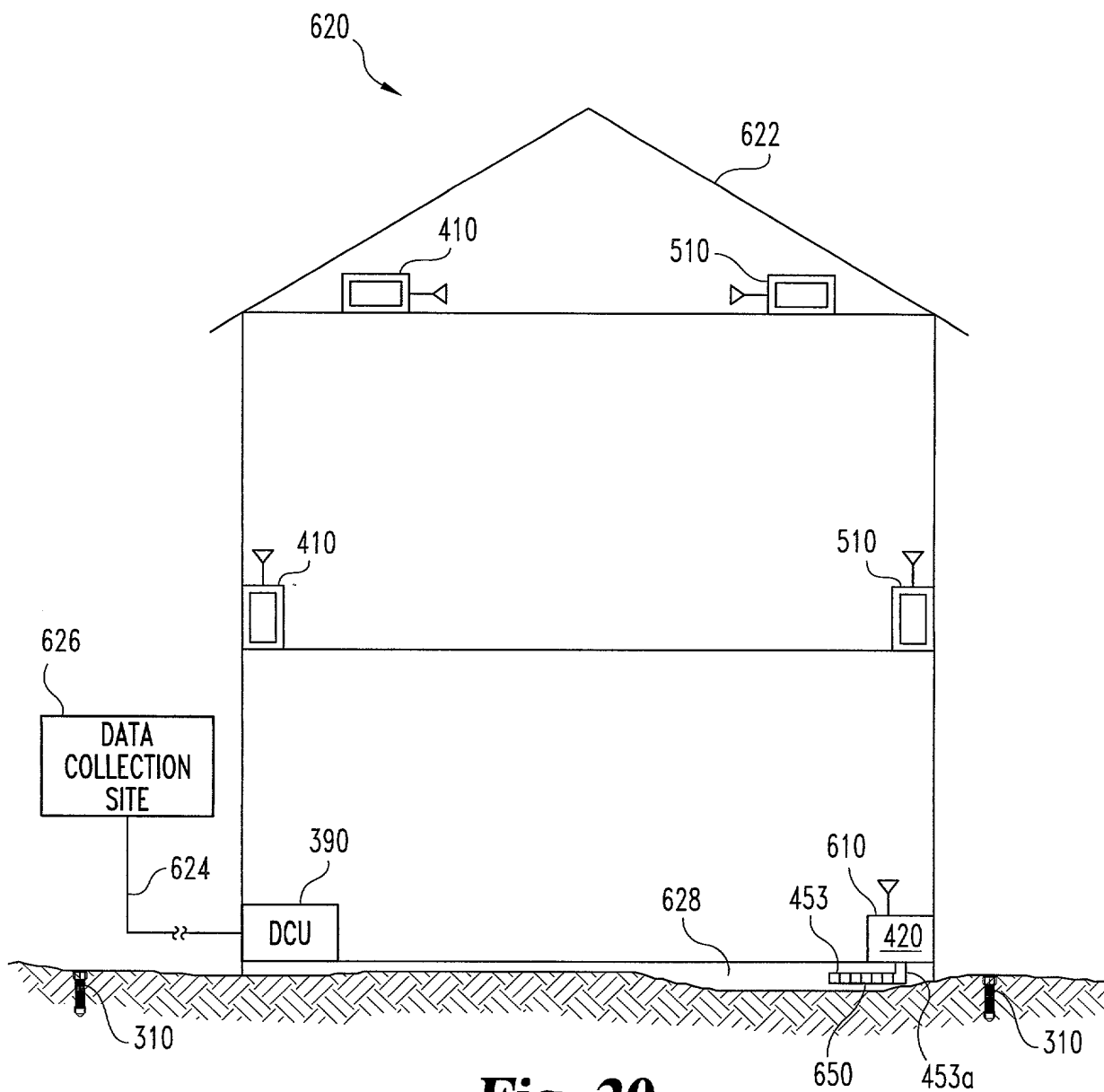


**Fig. 18**

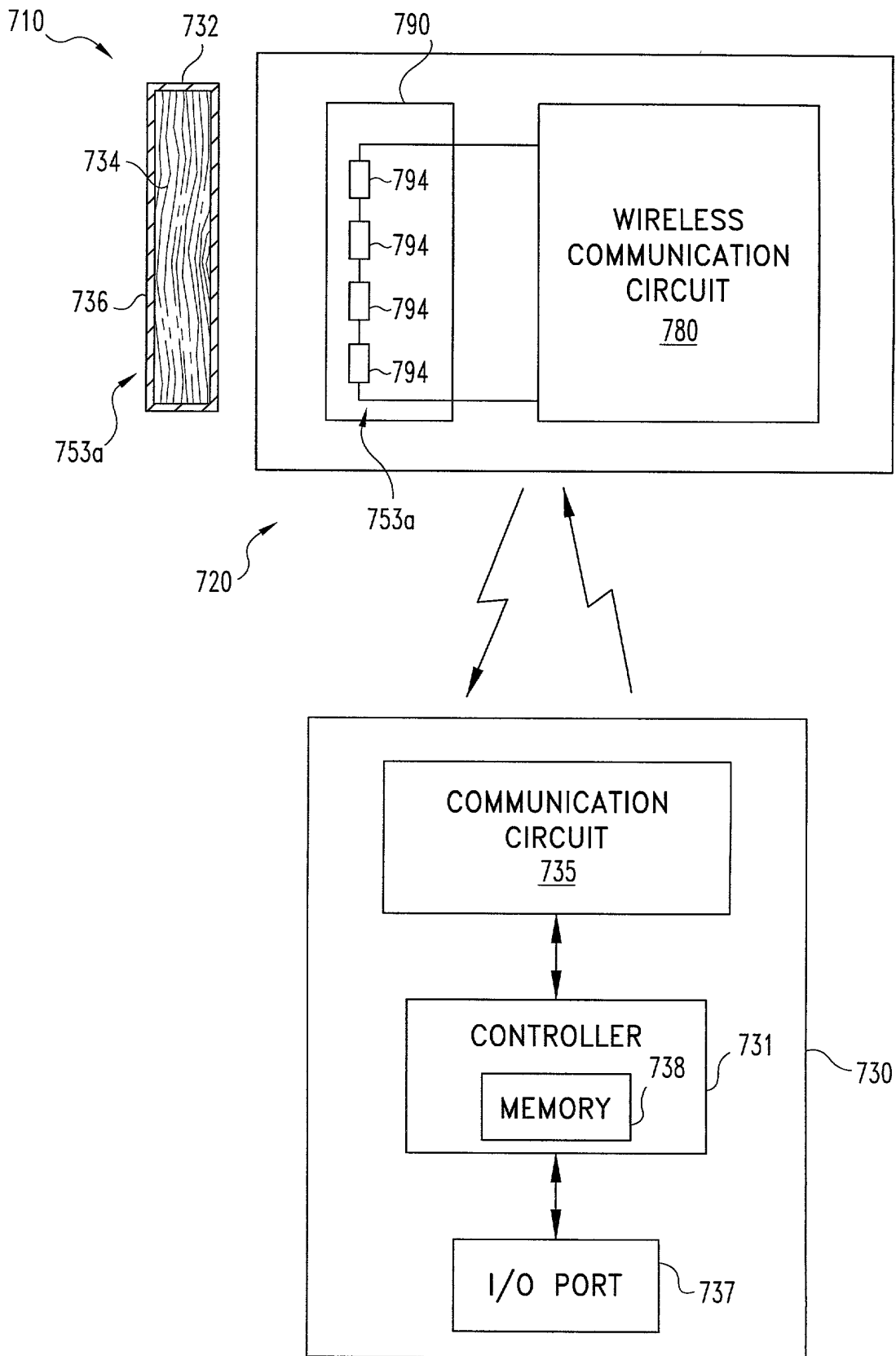


**Fig. 19**

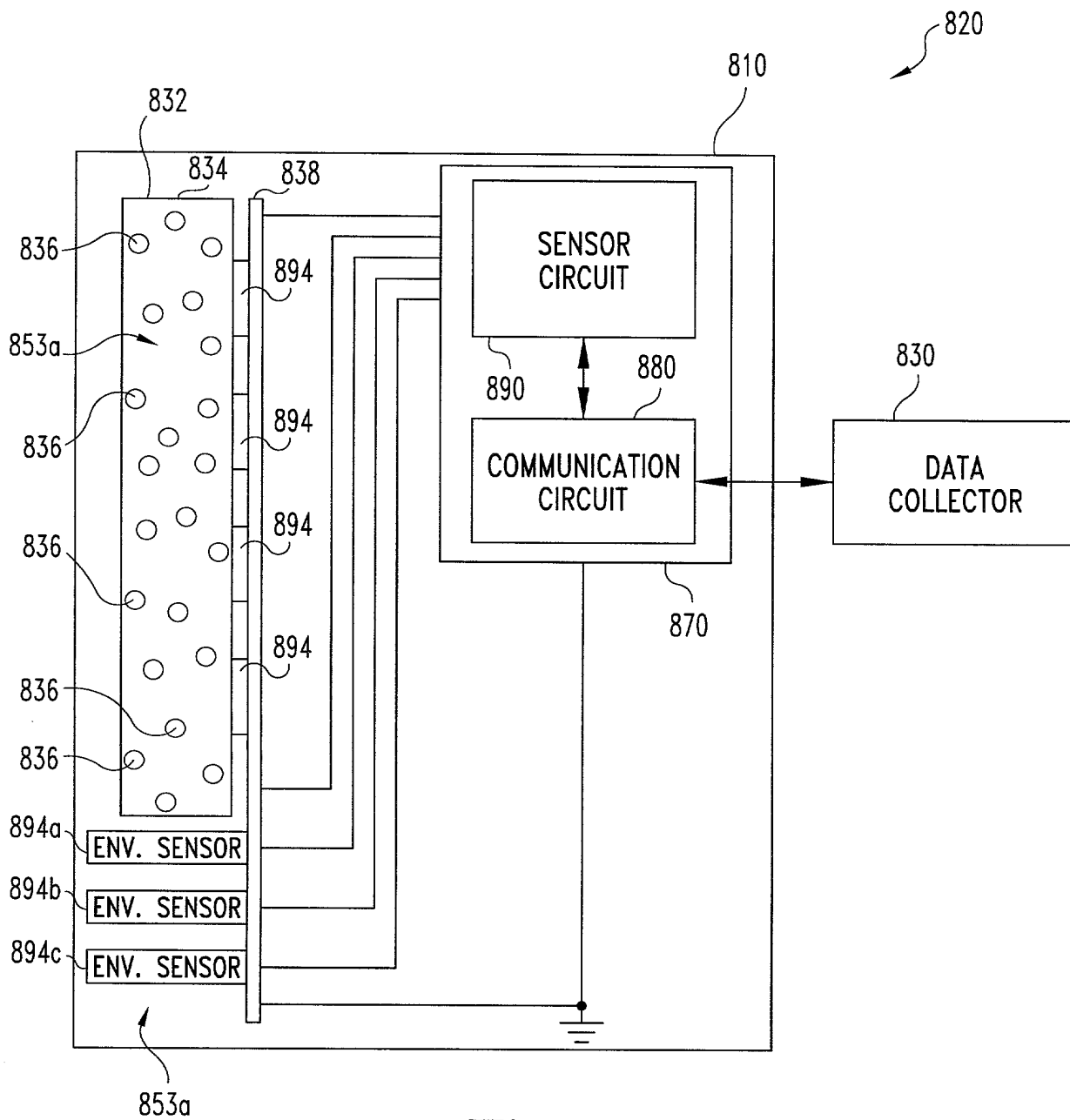




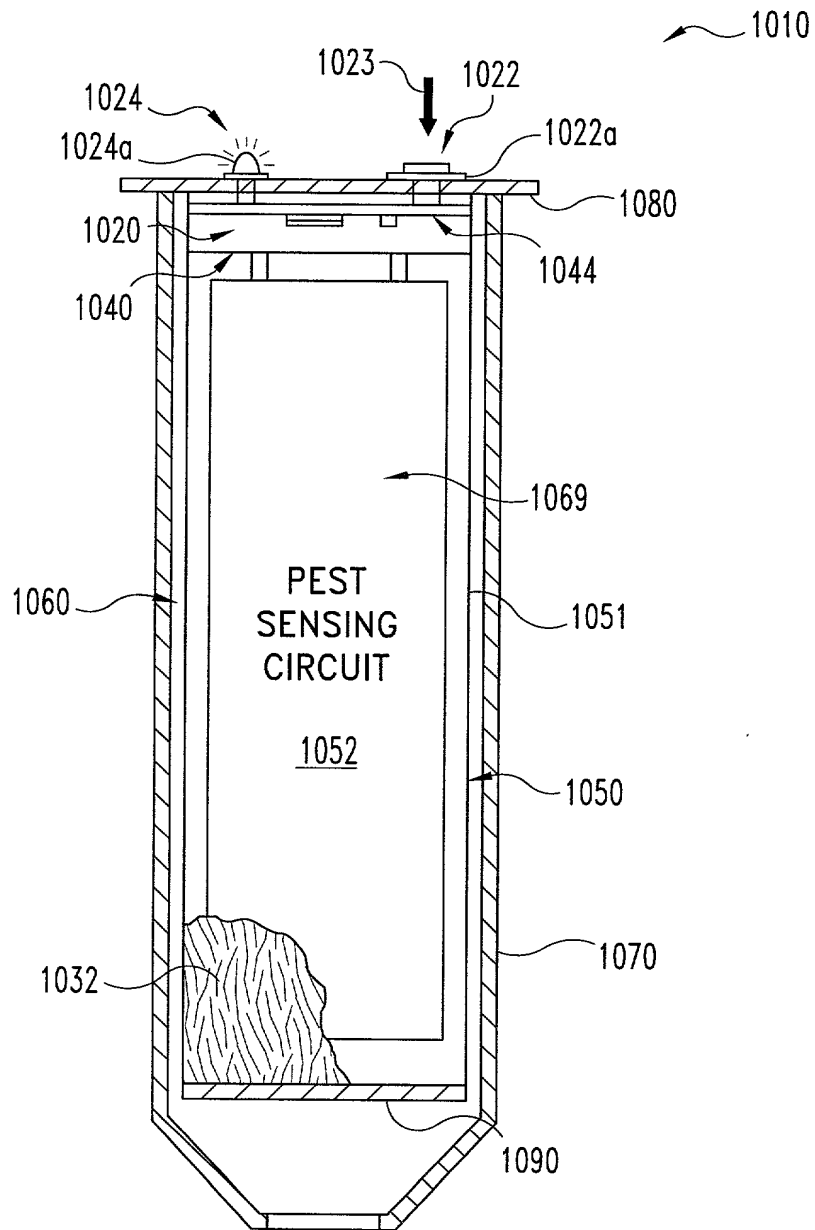
**Fig. 20**



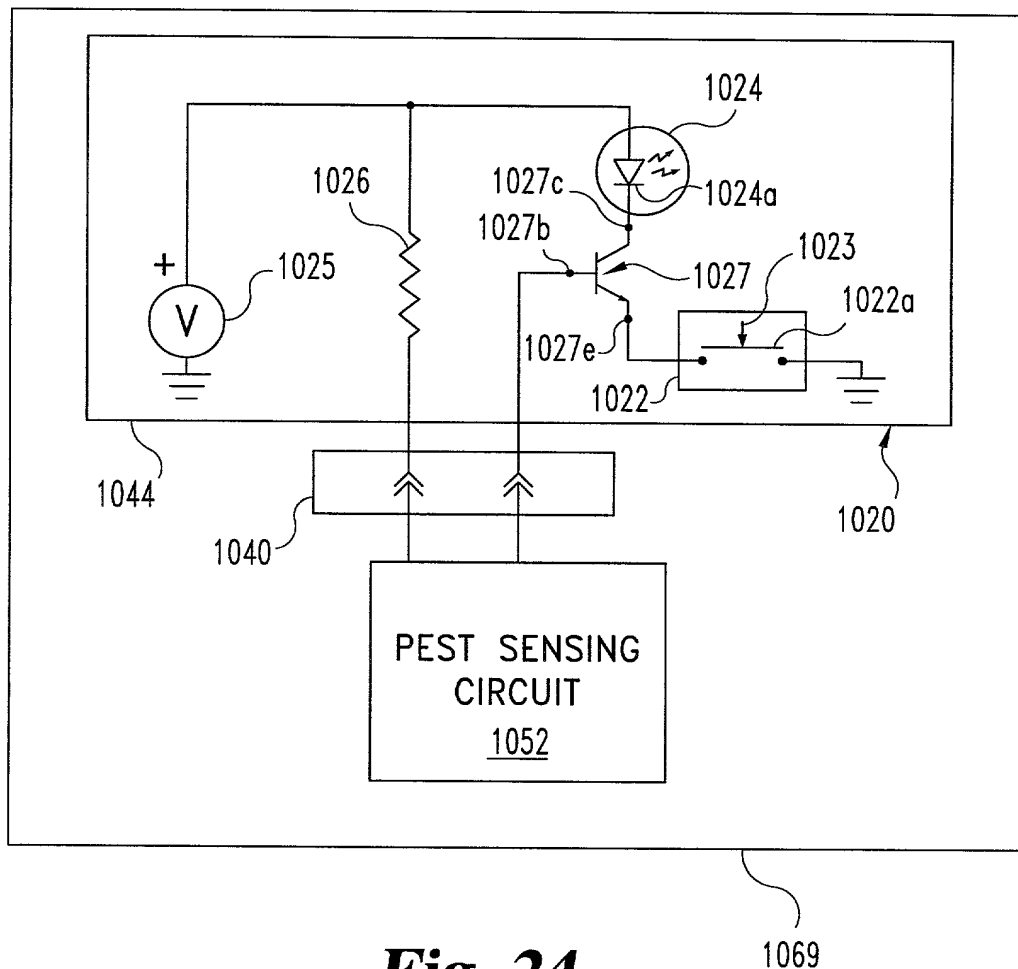
**Fig. 21**



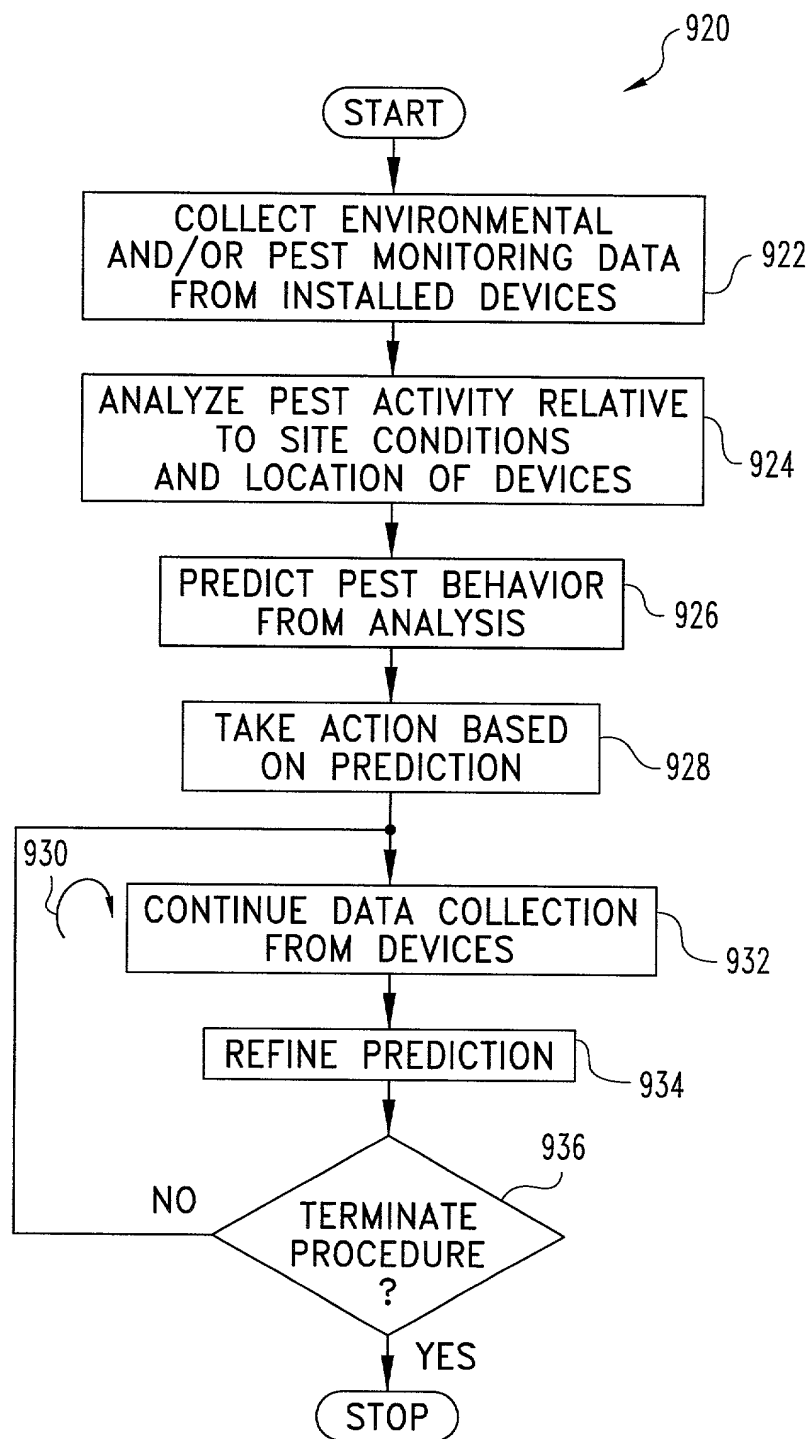
**Fig. 22**



**Fig. 23**



**Fig. 24**



**Fig. 25**